INSECT SURVEY REPORT - CHIPPEWA NATIONAL FOREST
1965

1. Introduction

An aerial detection survey was made on the Chippewa National Forest and adjacent lands to determine which insects were present in sufficient numbers to produce noticeable damage to trees. Particular emphasis was given to stands of jack pine (Pinus banksiana)(Lamb.) for evidence of the jack pine budworm (Choristoneura pinus)(Free) and to stands of aspen (Populus spp.) for evidence of the forest tent caterpillar, (Malacosoma disstria). All flying was done on July 28 and July 29, 1965.

Personnel conducting the survey were V. F. McCowan, Staff Entomologist, Chippewa National Forest; D. L. Packer, Timber Management Specialist, Chippewa National Forest; and S. Gheen, U. S. F. S. pilot from Ely, Minnesota.

The survey covered the area within the boundaries of the Chippewa National Forest, and some adjacent lands for a distance of five miles about the perimeter of the aforementioned National Forest.

There has been no previous aerial survey of the Chippewa National Forest for the primary purpose of detecting pest and disease activity. Reports from 1964 indicated light defoliation by the jack pine budworm and an apparent increase in the population of the forest tent caterpillar.

The 1965 aerial survey indicates some buildup of the forest tent caterpillar along the northern border of the Chippewa and within the Dora Lake District; however, inspection of several areas on the ground turned up some hail damage that could have been mistaken for caterpillar damage. The jack pine budworm was quite active throughout the southwestern part of the

Chippewa and on the White Earth and Red Lake Indian Reservations, but neither top killing or top killing was evident.

II Survey Method

The survey made use of the aerial type in which U.S.G.S. quadrangle sheets were used. These quadrangle sheets included some cover type and were at a scale of approximately 2" to 1 mile.

Spacing of flight lines was at intervals of two miles for the west half of the Chippewa so that all jack pine budworm damage could be mapped in with 100% coverage; on the remainder of the Forest. Flight lines were spaced at intervals of six miles allowing a 33-1/3% coverage of the area flown. All flight lines were oriented along a north-south axis and insect and disease activity mapped in place as it appeared.

Conditions that were recorded are described as follows:

Aspen, Paper Birch - Degree of Defoliation

1. Light: Noticeable Defoliation
2. Moderate: 50% - 75% of foliage removed
3. Heavy: More than 75% of foliage removed, usually defoliation is complete.

Jack Pine Types - Degree of Defoliation

1. Light: Slight browning of foliage, less than 25% of crown involved.
2. Moderate: Definite browning of foliate 25% - 50% of crown involved.
3. Heavy: A very definite browning of foliage on more than 50% of crown.

A Cessna 185 aircraft equipped with floats was used for the survey. An altitude of 500 feet and a speed of 100 mph was maintained throughout the survey. The crew consisted of a pilot, who, in addition to flying the aircraft, assisted

Results and Discussion

Jack Pine Budworm

The jack pine budworm activity was largely confined to the western and southwestern portions of the Chippewa National Forest. Total area of infestation was 18,630 acres which could be broken down as follows:

1. Light Infestation - 6480 acres
2. Moderate Infestation - 2700 acres
3. Heavy Infestation - 9450 acres

Tree mortality has not shown up in any area as yet, and in fact, very little twig killing or tip killing was evident; therefore, it is not unreasonable to assume that the infestation in the worst areas has persisted no more than two years. This year (1965) an extremely heavy crop of staminate flowers was produced and these flowers persisted through mid-August. From an aerial view these persisting flowers gave the trees a far more desperate appearance than was actually the situation when observed on the ground. In most cases, new foliage suffered the heaviest defoliation. Open stands and edges of stands along roads suffered the most defoliation, but they also produced the most staminate flowers.

It would be advisable to continue surveillance of this insect by aerial and ground methods in 1966. A control program is not warranted for 1966.

FOREST TENT CATERPILLAR

Tent caterpillar activity was somewhat sporadic on the Chippewa and where defoliation was evident, it was usually light. The only area of heavy defoliation occurred in the northeast corner of the Chippewa. Ground examinations indicated that hail as well as tent caterpillars were responsible for foliage loss. A breakdown of the various defoliation categories in terms of acreage are as follows:

1. Light - 31,330 acres
2. Moderate - 9,360 acres
3. Heavy - 8,730 acres

49,420 acres

Principal tree species being defoliated by the pest were aspen and birch. Some defoliation occurred on oak and willow. Particular emphasis was given to the Leech Lake area, but no evidence of defoliation could be found. If a buildup of the tent caterpillar is in progress, it is in its early stages. Continued surveillance should be made and the aerial coverage should be increased to cover the entire Forest and the three Indian reservations.

MISCELLANEOUS PESTS & DISEASES

Porcupine damage was picked up on the Marcell District in several large plantations, and duly reported to the Ranger.

Some flagging was noticeable in red pine plantations 20 - 30 years of age on the Bena and Marcell Districts, and spittlebug activity was suspected. However ground examination in which many dead tips were examined, turned up a high population of the red pine cone beetle (Conopthorus resinosae).

RECOMMENDATIONS FOR 1966

An aerial survey of the entire Chippewa should be made next year using the same sketch mapping technique. For detection purposes in delving a variety of tree species and insect pests, the sketch mapping technique is more versatile and efficient, and provides more coverage and diverse data than a recorder-type survey for such a relatively small area. The survey should be carried out at about the same time, or perhaps a week or two earlier than in 1965. Some thought should be given to the formation of a permanent crew for the survey, in which personnel in a permanent status could be utilized. Such a survey crew would be of obvious advantage. Personnel below the level of Ranger would probably be best because they seem to be less subject to employee turnover or transfer.

Two sets of maps are attached showing the approximate areas of damage by the jack pine budworm and the forest tent caterpillar within the Forest boundaries.

Enclosure

JACK PINE BUDWORK DEFOLIATION - 1965 Jack Pine

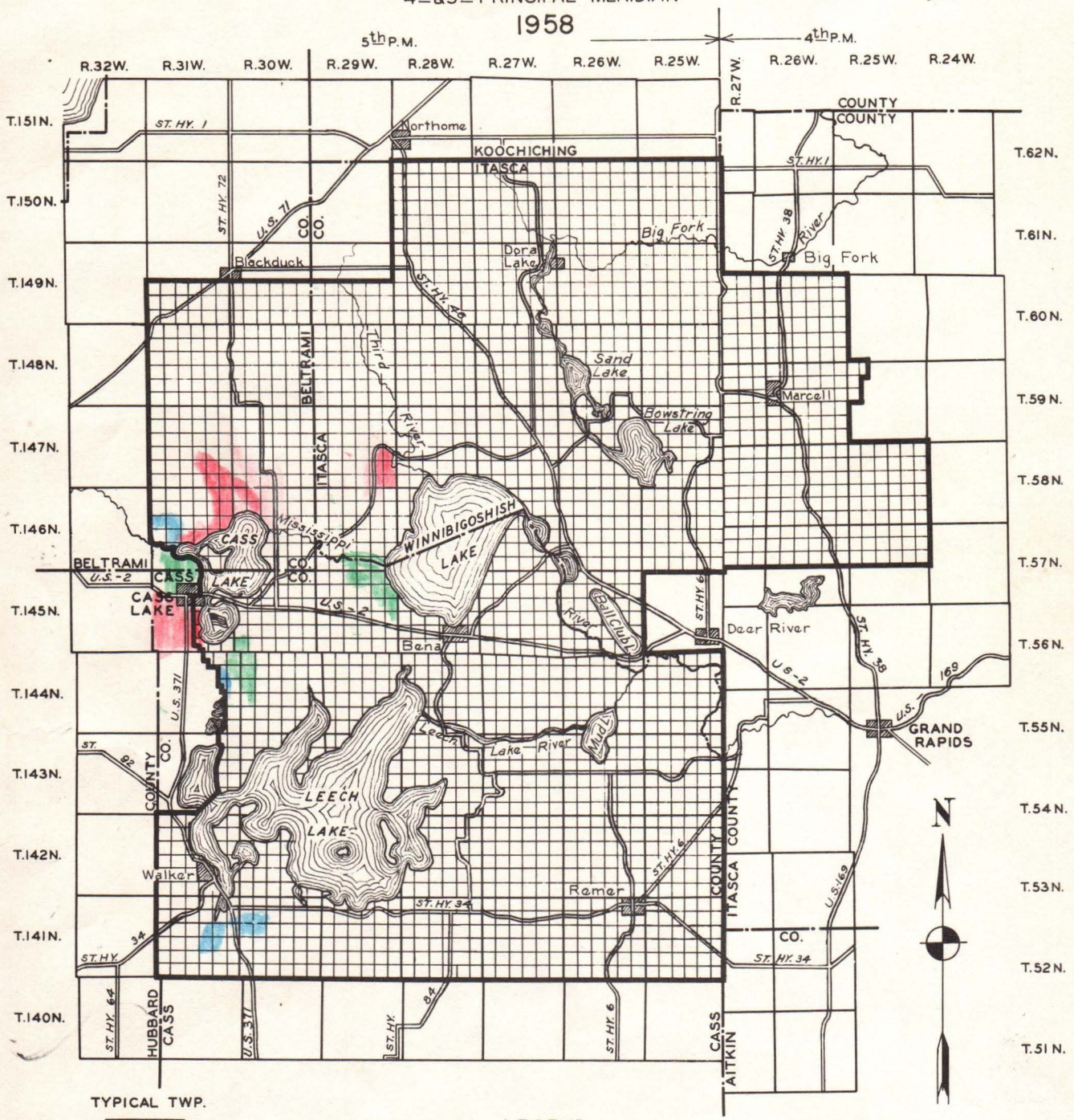
- Light
- Moderate
- Heavy

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE REGION 9

CHIPPEWA NATIONAL FOREST

BELTRAMI, ITASCA, AND CASS COUNTIES
STATE OF MINNESOTA
4th & 5th PRINCIPAL MERIDIAN
1958

Light - 6480 Acres
Moderate - 2700 Acres
Heavy - 9450 Acres
Total - 18,630 Acres



TYPICAL TWP.

6	5	4	3	2	1	
7	8	9	10	11	12	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	

SCALE
0 3 6 12 18 MILES

LEGEND
SUPERVISOR'S OFFICE
NATIONAL FOREST BOUNDARY
MAIN HIGHWAYS AND ROADS

FOR INFORMATION CONTACT:
FOREST SUPERVISOR
U.S. FOREST SERVICE
CASS LAKE, MINNESOTA

USDA-SCS-MILWAUKEE, WIS. 1958

FOREST TENT CATERPILLAR DEFOLIATION - 1965 - Aspen & Birch

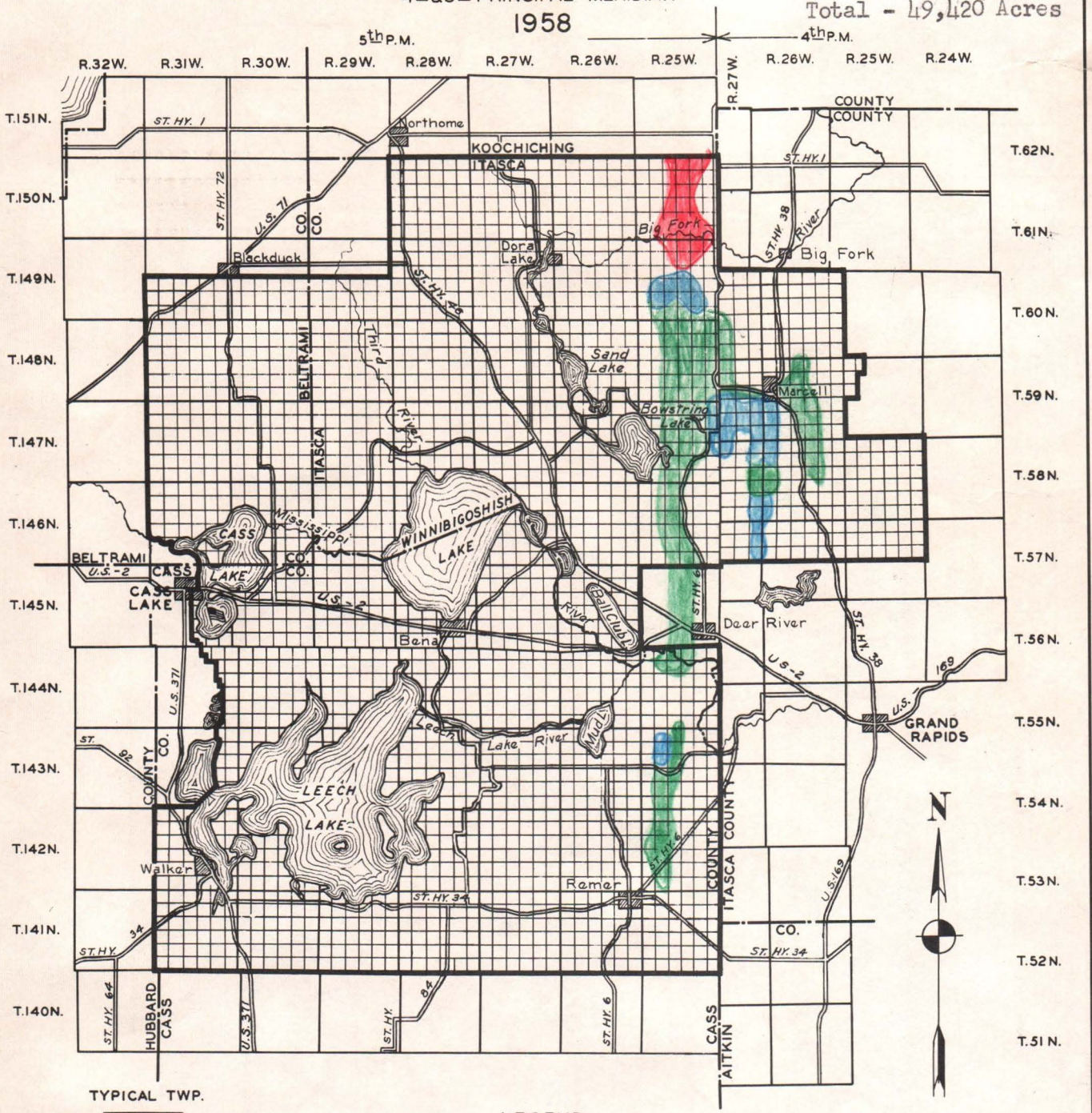
- Light Defoliation
- Moderate Defoliation
- Heavy Defoliation

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE REGION 9

CHIPPEWA NATIONAL FOREST

BELTRAMI, ITASCA, AND CASS COUNTIES
STATE OF MINNESOTA
4th & 5th PRINCIPAL MERIDIAN
1958

Light - 31,330 Acres
Moderate - 9360 Acres
Heavy - 8730 Acres
Total - 49,420 Acres



TYPICAL TWP.

6	5	4	3	2	1	
7	8	9	10	11	12	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	

SCALE
0 3 6 12 18 MILES

LEGEND
- SUPERVISOR'S OFFICE
- NATIONAL FOREST BOUNDARY
- MAIN HIGHWAYS AND ROADS

FOR INFORMATION CONTACT:
FOREST SUPERVISOR
U.S. FOREST SERVICE
CASS LAKE, MINNESOTA

USDA-SCS-MILWAUKEE, WIS. 1958